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Abstract: The present study investigated the longitudinal association between the development of bullying (traditional bullying and cyberbullying) and the development of moral deficiencies (moral disengagement, low moral responsibility, and weak feelings of remorse) during adolescence. A total of 960 Swiss adolescents completed an electronic questionnaire in schools four times, with 6-month intervals. Results of a parallel process model showed that the initial levels of moral deficiencies were positively associated with initial scores of bullying. Furthermore, the initial levels of moral deficiencies were positively associated with the development of bullying (i.e., initial trend and changes in trend across time). In contrast, the initial level of bullying was not found to be associated with the development (i.e., the slope) of moral deficiencies. Accordingly, we conclude that moral deficiencies might be a trait that predicts the development of bullying and not vice versa. Implications of the findings for bullying prevention are discussed.

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The Chicken and the Egg: Longitudinal Associations Between Moral Deficiencies and Bullying. A Parallel Process Latent Growth Model

Fabio Sticca & Sonja Perren

Abstract

The present study investigated the longitudinal association between the development of bullying (traditional bullying and cyberbullying) and the development of moral deficiencies (moral disengagement, low moral responsibility, low feelings of remorse) during adolescence. A total of 960 Swiss adolescents completed an electronic questionnaire in schools four times with six months intervals. Results of a parallel process model showed that the initial levels of moral deficiencies were positively associated with higher initial scores of bullying. Furthermore, the initial levels of moral deficiencies were positively associated with initial changes of bullying, and negatively with changes in trend of bullying across time. In contrast, the initial level of bullying was not found to be associated with the slope of moral deficiencies. Accordingly, we conclude that moral deficiencies might be a trait that predicts the development of bullying behaviors and not vice versa. Implications of the findings for bullying prevention are discussed.

Keywords: cyberbullying, traditional bullying, moral disengagement, moral emotions, longitudinal data.

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Introduction

Bullying is an aggressive behavior that conflicts with individual and social moral standards. This is the case for both traditional bullying (defined as a particular form of aggressive behavior that it is repeatedly performed against a defenseless victim; Olweus, 1993) and cyberbullying (defined as bullying performed using electronic forms of comunication; Slonje & Smith, 2008). According to the social cognitive theory of the moral self (Bandura, 1999), if an individual performs some sort of behavior that is in contrast to his or her moral standards, cognitive mechanisms such as moral disengagement might be selectively activated in order to free oneself from self-sanction. Therefore, individuals who bully might use these mechanisms to maintain a positive self-image and to escape feelings of remorse.

A body of research has addressed the question whether the social cognitive theory of the moral self can be applied to bullying behavior. More specifically, recent research has examined how bullying behaviors are associated with moral deficiencies such as low moral values, high moral disengagement, low moral responsibility and less moral emotions, thus taking an integrative approach that combines both moral cognitions and moral emotions (Malti & Latzko, 2010; Menesini et al., 2003). Regarding moral cognitions, traditional bullying was found to be positively associated with moral disengagement (Hymel, Rocke-Henderson, & Bonanno, 2005; Menesini et al., 2003; Obermann, 2011; Perren & Gutzwiller-Helfenfinger, 2012) and negatively associated with moral responsibility (Perren, Gutzwiller-Helfenfinger, Malti, & Hymel, 2012). Furthermore, moral disengagement was found to be positively linked to cyberbullying behaviors (Pornari & Wood, 2010). However, one study found no association between moral disengagement and cyberbullying (Bauman, 2010), while

other studies found no association between moral disengagement and cyberbullying once moral values and feelings of remorse (Perren & Gutzwiller-Helfenfinger, 2012) or traditional bullying and rule-breaking behaviors (Sticca, Ruggieri, Alsaker, & Perren, 2013) were taken into account. Therefore, evidence for the association between moral cognitions and traditional bullying is stronger than evidence for its association with cyberbullying.

Based on a model by Lewis (1992), Menesini et al. (2003) proposed a model that combines moral emotions and moral justifications. In this model is postulated that morally responsible emotions (i.e., guilt and shame) and morally disengaged emotions (i.e., indifference and pride) are two opposite ends of a continuum and indicate attitudes of moral responsibility and disengagement, respectively. The authors showed that traditional bullies display more morally disengaged emotions, and Menesini and Camodeca (2008) showed that they also display less morally responsible emotions. Therefore, moral cognitions and moral emotions are closely linked to each other and play a prominent role in the understanding of bullying behavior.

To date, no study has examined how the development of bullying as a construct that encompasses both traditional bullying *and* cyberbullying are associated with the development of moral deficiencies (i.e., high moral disengagement, low moral responsibility, and less moral emotions). The present study seeks to fill this research gap by exploring the longitudinal association between bullying and moral deficiencies.

Research on the association between bullying (traditional and cyber) and moral deficiencies is largely cross-sectional in design and has mainly explored whether moral deficiencies can predict bullying. This body of research assumed that moral deficiencies might be what leads bullies to bully their peers and what allows them to do so without showing moral emotions such as shame or guilt (Hymel et al., 2005; Menesini et al., 2003). Therefore, moral deficiencies were conceptualized as a *trait* that predicts behavior. However, it might also be that levels of moral disengagement increase in bullies and cyberbullies as

they keep performing behaviors that put them at risk for negative self-sanctions. This suggests that moral disengagement might be more of a *state* that is selectively activated when bullying is enacted. Indeed, Bandura (2002) discussed that during the development of the moral self, individuals observe their actions (and the context in which it occurs) and evaluate them as a function of acquired moral standards and external circumstances. Based on this evaluative self-regulatory process, moral disengagement might selectively be activated. Thus, bullies and cyberbullies might learn how to morally disengage from their repeated behavior and, therefore, how to maintain a positive self-view and avoid negative feelings despite continuously attacking their peers. Such a mechanism has also been found in past research on moral values in the context of delinquency (Hirschi, 1969). In sum, it is still unknown whether moral deficiencies contribute to engagement in bullying behaviors (i.e., moral deficiencies can be thought of as a trait that predicts bullying behavior) or if bullying behaviors contribute to higher levels of moral deficiencies (i.e., moral deficiencies can be thought of as a state that is predicted by behavior) or both.

The Present Study

Our aim was to explore longitudinal associations between bullying (traditional and cyberbullying) and moral deficiencies (moral disengagement, moral responsibility, and feelings or remorse). Specifically, we aimed to examine the directionality of the association, including whether there is a reciprocal relationship between bullying and moral deficiencies. In order to test our hypotheses, we used a parallel process latent growth model (Chung, White, Hipwell, Stepp, & Loeber, 2010) that allowed us to test whether growth parameters of one latent growth model (LGM) predicted those of another LGM. Based on previous findings from cross sectional research, we hypothesized that the initial levels of bullying and moral deficiencies would be positively associated. Further, we hypothesized that, on one hand, the initial level of bullying behavior would predict the development of moral deficiencies over

time and, on the other hand, that the initial level of moral deficiencies would predict the development of bullying behavior over time.

Regarding moral development, it must be noted that in the context of the present study we conceptualized *development* in the sense of *short-term* development that takes place in a time frame of about two years. Therefore, by development of moral deficiencies we did not allude to long-term moral development as described in the stage theories and other theories of moral development (e.g., Kohlberg, 1969; Piaget, 1932). Instead, we focused on short-term inter- and intraindividual variability of moral deficiencies and bullying behavior and on how these constructs are longitudinally associated with each other after the transition to secondary school.

Method

Procedure

The present paper includes data from a longitudinal study conducted in Switzerland (netTEEN). Four assessments were carried out between November 2010 and May 2012 with time intervals of six months. As required by Swiss legislation, permission to conduct the study was obtained from the respective school councils. School directors and teachers from the selected schools volunteered, and parents were told about the study and asked to inform the teachers if they did not want their children to participate (passive consent). The parents of four adolescents refused to participate at each assessment. The participants were informed about the survey's procedure and goal, and were given the opportunity to refrain from participation with no negative consequences (informed oral consent). Students who did not want to participate were offered another activity during the relevant school period.

An electronic self-report questionnaire was administered in classrooms on netbooks. For students who were absent during the classroom assessment a personal login and password was distributed. These students completed an online version of the questionnaire.

Sample

Three of the 26 Swiss cantons (member states of the Swiss federal State) were selected for study participation, namely Ticino, Valais, and Thurgau. In each of the three cantons, four schools with at least three classrooms were randomly selected and each school was represented in the present study by three to four classrooms, resulting in a total of 43 classrooms. A total of 960 adolescents participated in the present study. The numbers of participants were 834, 837, 882 and 859 at T1, T2, T3, and T4 respectively. At the third assessment, two more classrooms were included in the study because in one school the classrooms were reorganized and the previous participants were distributed in classrooms that did not previously participate in the first two assessments. A total of 725 (75.8%) participants completed all four waves of assessment. Attrition between the assessments was very low and was mainly due to students having moved to other schools. At each assessment, 49% of the participants were female. The first assessment was conducted at the beginning of grade seven. At the first assessment, the mean age of the participants was 13.2 years (SD = 0.59 years, min = 11.1, max = 15.3). Grade seven represents the transition to secondary school for all adolescents in the cantons of Valais and Thurgau. In Ticino the transition is after grade five and, therefore, we decided to stick to grade seven for the whole sample. We decided to start the assessments as the participants were in grade seven because the transition to secondary school was completed and because it is the age when cyberbullying is most prevalent (Tokunaga, 2010).

Measures for Bullying Behaviors

Traditional bullying was assessed using an adapted version of a validated traditional bullying scale (Alsaker, 2003). This scale was introduced by a definition of bullying (based on Olweus, 1993) and consisted of six items encompassing a set of different aggressive behaviors (e.g., laughing at people, insulting, excluding or hitting someone). At each

assessment, participants were asked how often they had performed these behaviors during the past four months. Participants rated each item from one (*never*) to five (*almost daily*). A mean score of the six items was computed in order to obtain a single score of traditional bullying ($\alpha_{T1/T1/T3/T4}$ =. 76/.81/.85/.78). Higher scores indicate more traditional bullying.

Cyberbullying was assessed using a scale developed by Sticca et al. (2012). The scale encompassed a total of six items tapping different forms of cyberbullying (e.g., sending mean or threatening messages to single individuals, groups or publishing on the Internet). At each assessment, participants were asked how often they had performed these behaviors during the past four months. Possible responses ranged from one (*never*) to five (*almost daily*). A mean score of the six items was computed in order to obtain a single score of cyberbullying ($\alpha_{T1/T1/T3/T4}$ = .62/.96/.94/.95). Higher scores indicate more cyberbullying.

The mean scores and standard deviations of traditional bullying and cyberbullying at each assessment can be found in table 1.

Measures for Moral Deficiencies

Moral disengagement and moral responsibility were assessed using the *MOJUS* scale developed by Perren, Rumetsch, Gutzwiller-Helfenfinger and Malti (2012). Participants were given two hypothetical bullying scenarios describing an adolescent excluding and humiliating a peer, respectively. After the scenarios, the participants were given a total of eleven statements assessing moral disengagement (e.g., *This schoolmate deserved it*), and a total of six statements assessing moral responsibility (e.g., *It is not ok to hurt other people like that*). Participants were asked if they agreed with the statements. Responses ranged from one (*not true*) to four (*true*). Scores from the moral disengagement items were averaged to obtain a single score for moral disengagement (11 items, $\alpha_{T1/T1/T3/T4}$ = .86/.90/.90/.91). Higher scores indicated higher levels of moral disengagement. Similarly, scores from the moral responsibility items were averaged to obtain a single score for moral responsibility (6 items,

$\alpha_{T1/T1/T3/T4}$ = .80/.86/.87/.88). The moral responsibility scores were reversed in order to avoid modeling complications. Accordingly, higher scores indicated lower levels of moral responsibility.

Feelings of remorse were assessed using a set of four hypothetical bullying scenarios developed for this study. The scenarios described different bullying situations and participants were asked about their feelings of remorse if they had done what was described in the respective scenarios. Response options ranged from one (*not bad at all*) to five (*very bad*). A mean score of the four items was computed to obtain a single score of feelings of remorse ($\alpha_{T1/T1/T3/T4}$ = .91/.92/.93/.93). The scores were reversed so that higher scores indicated less feelings of remorse.

The mean scores and standard deviations of moral disengagement, moral responsibility, and feelings of remorse at each assessment can be found in table 1, together with the correlations between all study variables at each assessment.

Analysis Strategy

A parallel process latent growth model was used to test the study hypotheses. First, we estimated two separate LGMs: one for bullying and one for moral deficiencies. Traditional bullying and cyberbullying were included in the present analyses as two indicators of a single latent construct (i.e., bullying) because our aim was to look at the common elements of these two forms of bullying (i.e., the shared variance). Regarding moral deficiencies, we used moral disengagement, moral responsibility and feelings of remorse as indicators; therefore, combining moral cognition and moral emotion (Malti & Latzko, 2010; Menesini et al., 2003). For the final analyses, these two LGMs where put together and the associations between the latent growth parameters of the two processes were analyzed. Missing data was addressed using the Full Information Maximum Likelihood procedure under the assumption of missing at random.

Results

Model Specification for Bullying

The LGM for bullying was modeled using the observed mean scores of traditional bullying and cyberbullying. Since the latent constructs had only two indicators, factor loadings in the measurement models were *all* set to 1 in order to achieve local identification. Moreover, the intercept of cyberbullying items was set to 0 in order to define the metric of the LGM. For the structural model we started with the assumption of curvilinear development. Therefore, the factor loadings of the latent intercept were all set to 1, while those of the latent slope were set to 0, 1, 2, and 3. Further, the factor loadings of the latent curvature were set to 0, 1, 4, and 9 (Bollen & Curran, 2005). Moreover, we modeled autoregressive error covariances between observed scores of the same variables. Covariances between the latent intercept, the latent slope and the latent curvature were also freely estimated.

The resulting LGM for bullying showed a good model fit (χ^2 = 27.35, df = 12, χ^2/df = 2.28, CFI = .99, RMSEA = .04). Parameter estimates indicated that the covariance between the latent intercept and the latent slope, and between the latent intercept and the latent curvature were not significantly different from 0. Therefore, these two covariances were set to 0 and the model was estimated again and compared to the original model. The model comparison showed that there was no significant decrease in model fit due to the new constrains ($\Delta\chi^2$ = 4.06, Δdf = 2, p = .13).

The final LGM for bullying showed a good fit to the data (χ^2 = 31.41, df = 14, χ^2/df = 2.24, CFI = .99, RMSEA = .04). The latent intercept was found to be on the very low end of the possible score range (μ = 1.04, p < .001) and to have a significant variance (φ = 0.01, p < .001). This showed that adolescents generally started off with quite low latent scores in bullying and that there was significant interindividual variation in the initial level of bullying. Similarly, the latent slope was found to be quite small, although statistically significant (μ =

0.05, $p < .01$), and to have a significant variance ($\varphi = 0.09$, $p < .001$). Therefore, adolescents generally had a positive trend in their bullying behaviors at the beginning and there was significant interindividual variation in the initial trend. Finally, the latent curvature was not found to be different from 0 ($\mu = -0.01$, $p = .12$), although a significant variance was found ($\varphi = 0.01$, $p < .001$). These results showed that, on average, the initial positive trend in bullying behavior is stable. However, there was significant interindividual variation in the change in the trend over time, meaning that while the mean trend is a slight linear increase, some adolescents show an initial increase that eventually flattens off, and others even show a slight decrease towards the end.

Model Specification for Moral Deficiencies

The LGM for moral deficiencies was modeled using the observed mean scores of moral disengagement, moral responsibility (reversed), and feelings or remorse (reversed). The model specification for moral deficiencies was the same as the one used for bullying (curvilinear latent growth model).

The resulting LGM for moral deficiencies showed a good model fit ($\chi^2 = 80.497$, df = 32, $\chi^2/df = 2.52$, CFI = .99, RMSEA = .04). However, the mean and the variance of the latent curve were not found to be significant ($\mu = 0.007$, $p = .128$; $\varphi = 0.003$, $p = .072$). Therefore, the latent curve was removed from the model. The model without latent curve showed a good fit to the data (see table 2). However, the covariance between the latent intercept and the latent slope was not found to be significant and was set to 0. The model was then tested towards metric and scalar invariance. Table 2 shows the results of the invariance tests, including chi-square difference test. Metric and scalar invariance were found.

The final LGM for bullying fitted the data well (see table 2). The latent intercept of the LGM for moral deficiencies was found to be fairly low ($\mu = 1.72$, $p < .001$) and to have a significant variance ($\varphi = 0.12$, $p < .001$). This showed that adolescents generally started off

with relatively low scores in moral deficiencies and that there was significant interindividual variation in initial levels. The latent slope was found to be positive and quite small, although statistically significant ($\mu = 0.04$, $p < .01$), and to have a significant variance ($\varphi = 0.01$, $p < .001$). This showed that adolescents generally had a slight increase in moral deficiencies over the four assessments and that there was significant interindividual variation in the development of moral deficiencies.

Model Specification for the Parallel Process Model

A parallel process model was used to answer our research questions about the associations between the development of bullying and moral deficiencies. The two models presented above were put together and associations between the latent growth parameters were modeled. In a first step, we modeled all possible covariances between the latent growth parameters, except for those that were already found to be non-significant in the separate models (see above).

The resulting model matched the data well ($\chi^2 = 569.64$, df = 148, $\chi^2/df = 3.85$, CFI = .95, RMSEA = .06). The covariance between the latent intercept of bullying and the latent slope of moral deficiencies was not found to be significant. Furthermore, the covariance between the latent curvature of bullying and the latent slope of moral deficiencies was also found to be non-significant. Therefore, these covariances were set to zero and the model was estimated again.

The resulting model fitted the data well ($\chi^2 = 573.770$, df = 153, $\chi^2/df = 3.75$, CFI = .95, RMSEA = .05). Figure 1 shows the standardized solution of the parallel process model for bullying and moral deficiencies. Only significant correlations between the latent growth parameters are shown (straight double-headed arrows). The latent intercept of moral deficiencies was found to be positively correlated with the latent intercept ($r = .51$, $p < .001$) and slope of bullying ($r = .36$, $p < .001$), and negatively with its curvature ($r = -.29$, $p < .001$).

Therefore, high initial scores in moral deficiencies were associated with higher initial scores, steeper initial trends and stronger changes in trend of bullying over time. Furthermore the latent slopes of bullying and moral deficiencies were positively associated ($r = .13$, $p < .05$). Accordingly, steep developments of moral deficiencies were associated with higher initial trends of bullying development. However, the intercept of bullying was not correlated with the slope of moral deficiencies (i.e., the initial level of bullying was *not* associated with the development of moral deficiencies).

In order to test how initial levels of moral deficiencies are linked to the development of bullying, we computed the predicted trajectories of bullying for individual with low (one standard deviation below the mean), average, and high (one standard deviation above the mean) scores in bullying. Figure 2 shows the trajectory of bullying as a function of moral deficiencies. Those adolescents who had low initial scores of moral deficiencies also had low scores in bullying and did not show much change (i.e., they stay low). With increasingly higher scores of moral deficiencies, the initial bullying scores became higher, together with the initial trend in the development of bullying. Furthermore, the higher the initial score in moral deficiencies, the more the initial increase eventually changed direction and turned into a decrease (i.e., those adolescents that show a high increase at the beginning tend to show a decrease toward the end).

Discussion

The present study explored whether the development of bullying behaviors and moral deficiencies are reciprocally associated during adolescence. Our findings showed that higher bullying scores were associated with higher moral deficiencies scores in the cross-sectional view, which is consistent with results from previous cross-sectional research (Hymel et al., 2005; Menesini et al., 2003; Perren & Gutzwiller-Helfenfinger, 2012; F Sticca, Ruggieri, Alsaker, & Perren, 2012). In the longitudinal analyses, we were able to show that the initial

levels of moral deficiencies predicted the development of bullying, while the contrary was not the case (i.e., initial levels of involvement in bullying are not associated with changes in moral deficiencies). Those adolescents who show moral deficiencies at the beginning of grade seven are at increased risk of perpetrating bullying behaviors over time. However, bullying behaviors seem to become stable or even to decrease, especially if bullying behavior strongly increased at the beginning. This result is consistent with the concept of moral deficiencies as a trait-like characteristic that increases the likelihood that an individual will perform bullying behavior (Hymel et al., 2005; Menesini et al., 2003). Thus, moral deficiencies seem to antecede and, therefore, to be a possible cause of bullying behaviors.

The opposite hypothesis (i.e., that bullying behaviors predict the development of moral deficiencies) was not supported by our results. This non-significant association might be explained by the comparably high stability of moral deficiencies over the short time period considered in the present study. Moral deficiencies were found to be relatively stable, which also speaks to the concept of moral deficiencies as a trait instead of a state. This is consistent with results reported by Henry and Guerra (2000), who found that normative beliefs about aggression were stable during adolescence. The authors discuss that normative beliefs about aggression are formed during early childhood and gain more and more stability as norms are adjusted to one's and other's aggressive behaviors and beliefs about aggression (Huesmann, Eron, Lefkowitz, & Walder, 1984). This interpretation could also apply to moral deficiencies and bullying: bullying behavior in childhood might form moral deficiencies, which in turn predict bullying behavior during adolescence. Therefore, the social cognitive theory of the moral self might be better suited to explain how aggressive behavior and other learning processes form moral deficiencies during childhood, rather than how moral deficiencies predict bullying behavior during adolescence (Bandura, 1999).

The development of bullying over the four assessments was found to be linear on average and its shape was found to depend on the initial level of moral deficiencies. Moreover, those adolescents with high initial scores of bullying showed an increase at the beginning followed by a decrease towards the end. One possible explanation of this finding might be that in Switzerland the transition to secondary school is often accompanied by a change in the composition of the classroom and, therefore, of the peer-group. This might lead to a new establishment of hierarchies within the classroom. Bullying behavior has been discussed as an inappropriate way to achieve social dominance over peers (Sutton, Smith, & Swettenham, 1999). Those adolescents who show moral deficiencies might be at higher risk of using bullying behaviors as a means to establish dominance or status over their peers and might reduce these behaviors as soon as social dominance is established. This result also speaks to moral deficiencies being a trait that is associated with bullying behavior.

Conclusions

The present findings suggest that moral deficiencies can be thought of as a trait that is associated with the development of bullying during adolescence. Accordingly, prevention efforts should be undertaken as early as possible (Monks, 2011) in order to prevent the development of moral deficiencies at its very beginning and, therefore, to reduce the likelihood that bullying will be displayed during adolescence. Nucci and Turiel (2009) reviewed research on moral education and concluded that moral education needs to be embedded in a school climate of trust and to be integrated into regular academic curricula, rather than being implemented as separate teaching elements (Nucci, 2009). Moreover, it should be age-appropriate: In primary school teacher should focus on helping children in recognizing different social an moral aspects of complex everyday situations; In middle school the focus should be on helping children in coordinating moral and non-moral aspects of complex social situations; In high school the focus might be shifted to developing a critical

and analytical view of social situations and their moral aspects. Therefore, it is crucial to help children and adolescents in differentiating between moral, conventional, and personal issues (Nucci & Turiel, 2009). Most importantly, moral education should not be an attempt to ingrain a given set of moral rules upon the children and adolescents. Instead, the aim should be to give them the tools to think about moral and social norms and to develop their own morality based on a critical and analytical judgment of the social context they live in (Nucci & Turiel, 2009).

Strengths, limitations and direction for future research

The present study had a number of strengths, including the large sample drawn from different cantons, the longitudinal design, the inclusion of traditional and cyberbullying, the inclusion of moral cognitions and emotions, and the use of the parallel process model for data analysis. However, there are also some limitations. First, the time period examined in the present study was less than 2 years, which somewhat limits the generalizability of the present results. Further, the participants were already in grade seven during the first assessment and, therefore, we were not able to examine the association between bullying behavior and moral deficiencies during childhood and how moral development during childhood might affect bullying during adolescence (and vice versa). Finally, the internal consistency of both the traditional bullying and cyberbullying scales were found to relatively low at the first assessment compared to the following assessments. One possible reason for this finding is that the first assessment was carried out just after the transition to secondary school in two of the three cantons. Another reason might be that the participants were not too familiar with this type of studies and might not have known how to respond to these particularly sensible questions.

Future studies should examine the associations between bullying behaviors and moral deficiencies from childhood to adolescence. This might give us some insights into the

associations between these two constructs with a stronger developmental perspective. Furthermore, it might be interesting to examine the early predictors of moral deficiencies (e.g., family variables) since this would enhance our understanding of their development and, therefore, of how we might prevent maladaptive developments.

References

Bandura, A. (1999). Moral disengagement in the perpetration of inhumanities. *Personality and Social Psychology Review*, *3*(3), 193–209.

Bandura, A. (2002). Selective moral disengagement in the exercise of moral agency. *Journal of Moral Education*, *31*(2), 101–119.

Bauman, S. (2010). Cyberbullying in a rural intermediate school: An exploratory study. *Journal of Early Adolescence*, *30*(6), 803–833.

Chung, T., White, H. R., Hipwell, A. E., Stepp, S. D., & Loeber, R. (2010). A parallel process model of the development of positive smoking expectancies and smoking behavior during early adolescence in Caucasian and African American girls. *Addictive Behaviors*, *35*(6), 647–650.

Henry, D., Guerra, N., Huesmann, R., Tolan, P., VanAcker, R., & Eron, L. (2000). Normative influences on aggression in urban elementary school classrooms. *American Journal of Community Psychology*, *28*(1), 59–81.

Hirschi, T. (1969). *Causes of delinquency*. Berkeley, CA: University of California Press.

Huesmann, L. R., Eron, L. D., Lefkowitz, M. M., & Walder, L. O. (1984). The stability of aggression over time and generations. *Developmental Psychology*, *20*(6), 1120–1134.

Hymel, S., Rocke-Henderson, N., & Bonanno, R. A. (2005). Moral disengagement: A framework for understanding bullying among adolescents. *Journal of Social Sciences*, *8*, 1–11.

Kohlberg, L. (1969). Stage and sequence: The cognitive-developmental approach to socialization. In D. Goslin (Ed.), *Handbook of socialisation theory and research* (pp. 347–480). New York: Rand Mc Nally & Company.

Lewis, M. (1992). *The exposed Self*. New York: Free Press.

Malti, T., & Latzko, B. (2010). Children's moral emotions and moral cognition: Towards an

integrative perspective. *New Directions for Child and Adolescent Development*, *129*, 1–10.

Menesini, E., & Camodeca, M. (2008). Shame and guilt as behaviour regulators: Relationships with bullying, victimization and prosocial behaviour. *British Journal of Developmental Psychology*, *26*(2), 183–196.

Menesini, E., Sanchez, V., Fonzi, A., Ortega, R., Costabile, A., & Lo Feudo, G. (2003). Moral emotions and bullying: A cross-national comparison of differences between bullies, victims and outsiders. *Aggressive Behavior*, *29*(6), 515–530.

Monks, C. P. (2011). Peer-victimisation in preschool. In C. P. Monks & I. Coyne (Eds.), *Bullying in different contexts* (pp. 12–35). Cambridge: Cambridge University Press.

Nucci, L. (2009). *Nice is not enough: facilitating moral development*. Upper Saddle River, N.J.: Merrill/Prentice Hall.

Nucci, L., & Turiel, E. (2009). Capturing the Complexity of Moral Development and Education. *Mind, Brain, and Education*, *3*(3), 151–159.

Obermann, M. L. (2011). Moral disengagement in self-reported and peer-nominated school bullying. *Aggressive Behavior*, *37*(2), 133–144.

Olweus, D. (1993). *Bullying at school: What we know and what we can do*. Malden, MA: Blackwell Publishers.

Perren, S., & Gutzwiller-Helfenfinger, E. (2012). Cyberbullying and traditional bullying in adolescence: Differential associations with moral values, moral emotions and morally disengaged justifications. *European Journal of Developmental Psychology*, *9*(2), 195–209.

Perren, S., Gutzwiller-Helfenfinger, E., Malti, T., & Hymel, S. (2012). Moral reasoning and emotion attributions of adolescent bullies, victims, and bully-victims. *British Journal of Developmental Psychology*, *30*(4), 511–530.

Piaget, J. (1932). *The moral judgment of the child*. New York: Free Press.

Pornari, C. D., & Wood, J. (2010). Peer and cyber aggression in secondary school students: The role of moral disengagement, hostile attribution bias, and outcome expectancies. *Aggressive Behavior*, *36*(2), 81–94.

Slonje, R., & Smith, P. K. (2008). Cyberbullying: Another main type of bullying? *Scandinavian Journal of Psychology*, *49*(2), 147–154.

Sticca, F, Ruggieri, S., Alsaker, F., & Perren, S. (2012). Longitudinal Risk Factors for Cyberbullying in Adolescence. *Journal of Community and Applied Social Psychology*, in press.

Sticca, F., Ruggieri, S., Alsaker, F., & Perren, S. (2013). Longitudinal Risk Factors for Cyberbullying in Adolescence. *Journal of Community & Applied Social Psychology*, *23*(1), 52–67.

Sutton, J., Smith, P. K., & Swettenham, J. (1999). Bullying and "theory of mind": A critique of the "social skills deficit" view of anti-social behaviour. *Social Development*, *8*(1), 117–127.

Tokunaga, R. S. (2010). Following you home from school: A critical review and synthesis of research on cyberbullying victimization. *Computers in Human Behavior*, *26*(3), 277–287.

Tables

Table 1: Descriptive statistics and Correlations between all study variables

		M	SD	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	CB t1	1.04	0.12	.081	.061	.032	.287	.204	.100	.096	.204	.200	.114	.124	-.136	-.131	-.124	-.132	-.218	-.205	-.190	-.133
2	CB t2	1.07	0.37		.537	.291	.134	.538	.327	.071	.175	.307	.283	.164	-.137	-.243	-.131	-.173	-.218	-.293	-.217	-.221
3	CB t3	1.10	0.44			.450	.184	.357	.625	.259	.176	.234	.327	.163	-.195	-.245	-.201	-.178	-.233	-.260	-.274	-.235
4	CB t4	1.11	0.46				.102	.231	.323	.456	.181	.178	.270	.292	-.118	-.170	-.197	-.140	-.158	-.206	-.224	-.221
5	TB t1	1.21	0.29					.403	.395	.311	.443	.371	.362	.287	-.265	-.274	-.237	-.251	-.314	-.342	-.324	-.310
6	TB t2	1.22	0.45						.484	.346	.329	.460	.405	.307	-.253	-.331	-.275	-.297	-.299	-.405	-.364	-.347
7	TB t3	1.26	0.50							.480	.299	.329	.424	.345	-.261	-.290	-.308	-.288	-.298	-.352	-.381	-.379
8	TB t4	1.24	0.52								.325	.268	.371	.407	-.188	-.256	-.269	-.261	-.228	-.251	-.300	-.340
9	MDis t1	1.67	0.57									.540	.519	.450	-.523	-.436	-.374	-.436	-.522	-.504	-.432	-.473
10	MDis t2	1.78	0.67										.586	.518	-.397	-.550	-.490	-.437	-.420	-.646	-.509	-.491
11	MDis t3	1.81	0.67											.644	-.317	-.467	-.449	-.491	-.432	-.530	-.580	-.557
12	MDis t4	1.82	0.70												-.268	-.426	-.459	-.438	-.347	-.467	-.498	-.556
13	MRes t1	1.92	0.78													.554	.500	.463	.623	.534	.479	.456
14	MRes t2	1.97	0.85														.621	.553	.541	.711	.556	.559
15	MRes t3	2.01	0.88															.660	.544	.604	.651	.622
16	MRes t4	2.04	0.91																.480	.590	.608	.734
17	Rem t1	2.27	1.09																	.673	.612	.567
18	Rem t2	2.32	1.16																		.719	.691
19	Rem t3	2.38	1.20																			.738
20	Rem t4	2.43	1.22																			

Note: M = mean, SD = standard deviation, CB = Cyberbullying, TB = Traditional bullying, MDis = Moral disengagement, MRes = Moral responsibility, Rem = Feelings of Remorse (note that the scores of MRes and Rem are reversed, i.e., higher scores indicate lower MRes and Rem)

Table 2: Model fit indices and model comparison results for moral deficiencies (n=960)

	χ^2	df	CFI	RMSEA	$\Delta\chi^2$	Δdf	p-value
Unconstrained	109.57	35	.987	.047			
Metric[1]	117.61	42	.987	.044	8.04	7	.329
Scalar[2]	131.56	48	.985	.043	12.99	13	.055

Note: [1] Factor loadings set equal across time, [2] item intercepts set equal across time

Figures

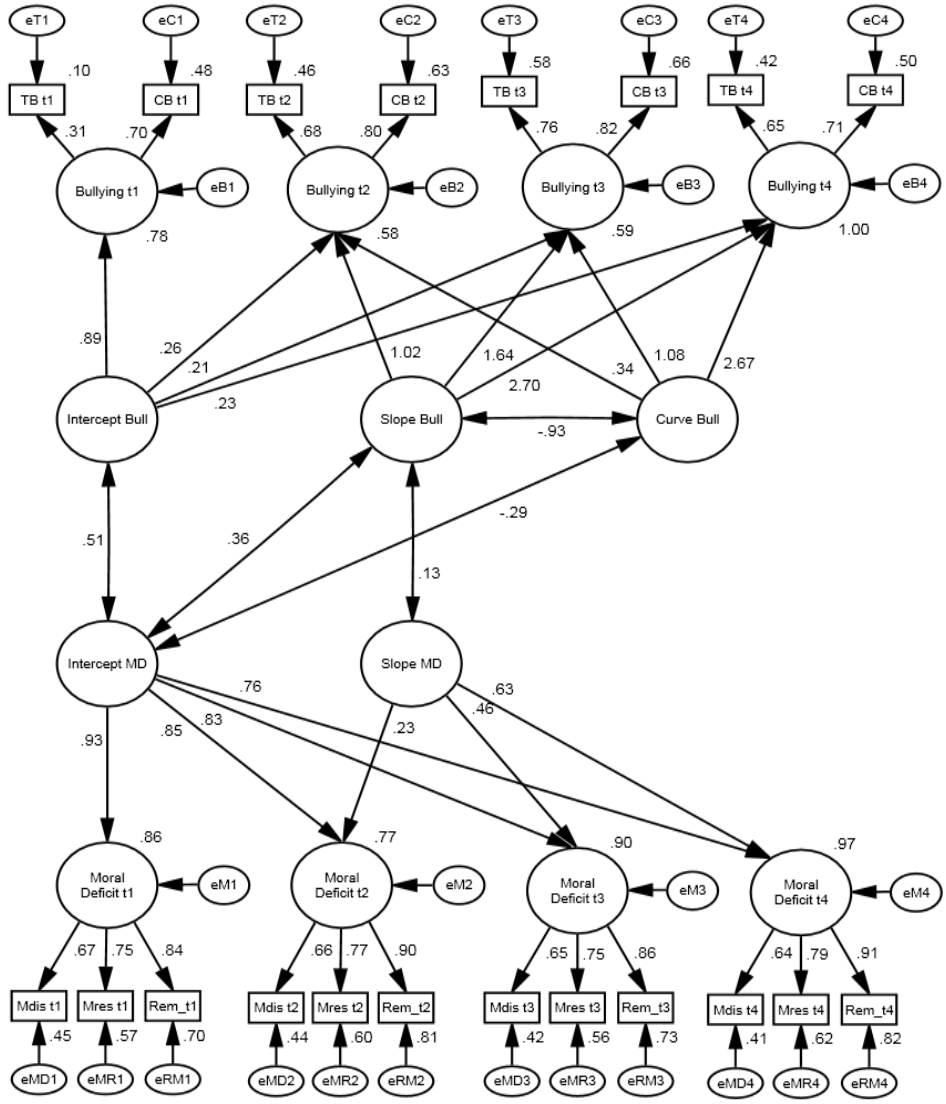

Figure 1: Standardized solution of the Parallel Process Model for bullying and moral deficiencies.

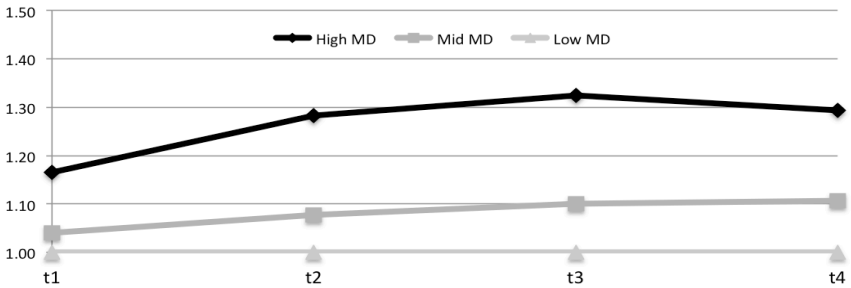

Figure 2: Bullying development as a function of the initial scores of moral deficiencies